WASHINGTON STATE UNIVERSITY
VETERINARY MEDICINE EXTENSION

ag animal health

VETERINARY MEDICINE EXTENSION

Fall 2009

WASHINGTON STATE UNIVERSITY EXTENSION & WSU COLLEGE OF VETERINARY MEDICINE

In This Issue

From the Editor

In 1862 the Morrill Act (aka the Land Grant Act) was signed into law by President Lincoln. The original mission of the land grant colleges was to teach agriculture, military tactics and mechanical arts and promote education of the industrial classes. In 1914, President Wilson signed the Smith-Lever Act which established the Extension Service as the educational arm of the U.S. Department of Agriculture; "the activities of which were within a unique nationwide system, funded and guided by a national, state, and local government partnership." Extension traditionally focused on extending research findings to agriculture but in the 1980's extension was redirected to be more issues-focused with programs in human nutrition, at-risk youth, and keeping rural lands rural. Extension programs in production agriculture and the use of new technology continued to flourish.

Despite the tremendous successes that Extension has had in teaching farmers and the public how to raise more productive crops, keep cows healthy, home-can food, use integrated pest management, and keep streams and rivers clean, for the last 20 years or more, those of us in Extension have heard about our impending demise. Diminishing public support, a less rural population, redirection of resources, competition as "information brokers" from industry and others, and depopulation of extension faculty have certainly not helped our cause. Some countries have even privatized extension, such as New Zealand's dairy extension program. But, in the face of all this, the mission of extension at each of the US land grant colleges continues and the dedication of its faculty, staff and volunteers is unimpeded.

At WSU, part of the vision of Extension is that it … "builds the capacity of individuals, organizations, businesses and communities, empowering them to find solutions for local issues and to improve their quality of life. Extension is recognized for its accessible, learner-centered, relevant, high quality, unbiased educational programs…." How we do this is by integrating research and outreach, but with fewer faculty and staff and less resources, how can we continue to do that?

Here in Veterinary Medicine Extension we have been working for the last two years to develop partnerships, enlist outreach support from non-extension faculty, provide educational programs in unique ways, package materials and tailor them for specific audiences and be as resourceful as we can. Just a few examples include a partnership with WSDA for online certification courses on Trichomoniasis and TB testing for veterinarians; a partnership with WSU-4H and development of programs for volunteer leaders; repackaging the *Beef300* course to an online one for

individuals who could not attend but wanted to "see" and "hear" the presentations; use of USDA integrated research/extension funding and other sources of outside funding for projects and programs on calf management and Beef Quality Assurance; and extensive use of the internet to provide inexpensive outreach to constituents and partners.

Our programs and outreach efforts do come at a cost, however. To spend our dollars wisely, we need to focus our efforts on those that are relevant to you, those for which we can attract federal or other funding, and those that are important to ag animal health. **If you have any ideas for new programs for agricultural animal health extension, please send them to VetExtension@vetmed.wsu.edu.**

Featured Faculty

Rocio Crespo, DVM, MS, DVSc, Dip ACPV

It is a pleasure to introduce myself to you. My name is Rocio Crespo. My first name is pronounced "Rotheo," and in Spanish it means dew. I am the new director of the Avian Health and Food Safety Laboratory, located in Puyallup. I joined the WADDL-WSU team this July. For the last 18 years I have enjoyed working in pet bird and poultry diagnostic pathology, research, and university teaching. Diagnostic work keeps me in touch with current disease concerns and up-to-date with scientific knowledge. My basic research interest is avian nutrition, diseases, and pathology with an emphasis on the musculoskeletal system. This position allows me to continue working with birds, interact with owners and producers, and develop and validate new tests for diagnosing avian diseases and food safety.

WSDA Corner

TB Testing Certification Course

All TB testing of cattle or bison in Washington State is performed by a veterinarian accredited by the USDA, Animal and Plant Health Inspection Services. All accredited veterinarians who test cattle or bison in Washington for TB are required to successfully complete training in tuberculosis testing procedures provided by USDA or WSDA by April 30, 2010. Veterinarians who do not meet this deadline may not perform official TB testing until training is completed.

To help Washington veterinarians meet the deadline and get the training they need, Vet Med Extension and WSDA teamed up to provide an online training course. Veterinarians who watch the video and pass the quiz will meet USDA and WSDA requirements for TB certification. To find and register for the course, go to: http://vetextension.wsu.edu/programs/bovine/tb/index.htm **For Questions, Contact WSDA: (360) 902-1878**

New Educational Program on Heat Detection in Dairy Cattle!

Our new Bovine Reproduction faculty member, Dr. Ram Kasimanickam (AKA Dr. Ram), developed an online course for producers, industry, veterinarians and students on heat detection in dairy cattle. Go to: http://vetextension.wsu.edu/courses/index.htm to take this free course offered by Veterinary Medicine Extension, WSU.

Feeding Quality Non-salable (Waste) Milk to Dairy Calves

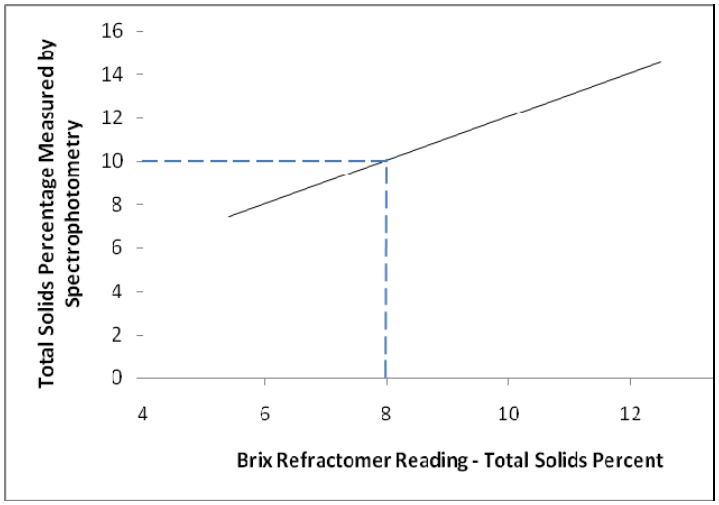
Whole milk is what nature intended for neonatal calves. Because of its nutrient content, this is a good reason to feed waste milk to young calves. But just as we handle and monitor milk for human consumption in very specific ways, we need to pay attention to the quality of waste milk we feed to calves. We know that pasteurization is important to bacteria the calf is exposed to. What else do we have to worry about?

At a large calf ranch, we looked at different measures of milk quality. We selected some techniques that could be done on-farm as well as some that could be done at a veterinary practice to see if there were easy ways to find milk that should not be fed. We evaluated bacteria counts both pre- and post-pasteurization, somatic cell counts (SCC), acidity (pH), and total solids.

Bacteria Counts – Bacteria counts, just like doing a bulk tank count, can be assessed periodically pre- and post-pasteurization to see if the pasteurizer is working properly. In our investigation, most waste milk samples had very large numbers of bacteria in the raw milk but not after pasteurization. What we still don't know is what effect ingestion of large amounts of dead bacteria has on baby calves.

Many large calf ranches and dairies use blood agar plates or Petri film to assess bacterial counts. Keeping plates on hand and an incubator working may not be for every producer so some may want to have their veterinarian or milk quality lab do cultures for them. Some producers are doing on-farm culturing for mastitis. If they can do a quantitative bulk tank count on the farm, they can also do the pre- and post-pasteurization bacteria monitoring.

Total Solids – We used a Brix refractometer to measured total solids (Reichert Brix 35HP). The manufacturer indicated that we first needed to compare our refractometer readings with a standard measurement of total solids. We compared Brix estimates of total solids with spectrophotometry estimates of a large number of milk samples (some with added water) at a milk quality laboratory and developed the following graph:



If we read 8 percent total solids on the refractometer, that meant we actually had about 10 percent total solids in the milk sample. Many of the waste milk samples from dairies in our investigation were very low in total solids, including the pooled milk (at about 11 percent). This indicated that the calves were not getting the nutrients we expected from whole milk; normally 12.5-13 percent total solids. The most likely way to have low solids is through dilution of the waste milk with water. However, stage of lactation of the cows, breed, and the number of cows with mastitis contributing to the waste milk may also influence the total solids.

Milk Spoilage – Estimating the pH of waste milk using a handheld pH meter is the easiest way to assess spoilage. The pH of milk will drop initially and then rise depending on the stage of spoilage, time,

temperature and the types and number of bacteria present. Spoilage can affect the odor and taste of the milk, which could affect intake, but also can affect nutrient content. In our study, pH was correlated with nutrient content: the lower the pH, the lower the total solids. Although intentionally-acidified milk (such as by adding organic acids) has been fed to calves successfully, feeding spontaneously-acidified (spoiled) milk may not have the same effects. Normal milk pH is about 6.5. Almost half of our samples had pH less than 6.1, explaining some of the low total solids.

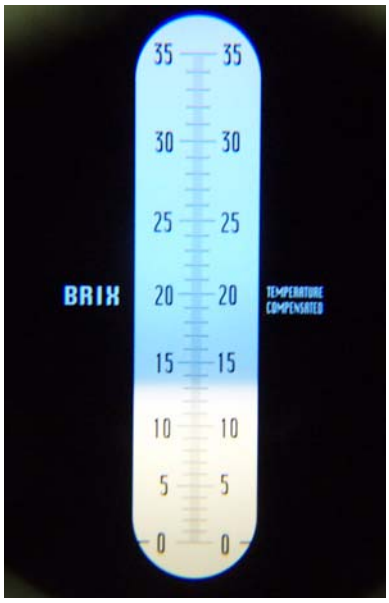
Somatic Cell Counts – Somatic cells come primarily from cows with mastitis milked into the hospital tank. The somatic cell counts of our samples were all very high. Monitoring SCC may not be a cost-effective way to assess waste milk quality because of the cost of the cell counter. However, high somatic cell counts are associated with low total milk solids and low milk protein and may explain some of the low total solids seen in our samples. Bottom line – if you are feeding milk from mastitic cows, total solids might be low.

Setting Up a Monitoring Program – There appear to be some easy ways to monitor waste milk fed to calves.

1. Identify spoilage by using a pH meter – discard milk with pH less than 6.3 or greater than 7.0
2. Identify total solids and consider adding solids using a milk replacer powder.
3. Periodically, assess the total bacteria count of pooled milk both before and after pasteurization to make sure the pasteurizer is functioning properly.

Correcting the Total Solids – To help ensure young calves get the nutrients they need, we set up a protocol for the calf feeders. The feeder needs to first place the waste milk sample on the refractometer* after a few slow inversions to mix the milk and read the total solids. They then can go to a chart and read the column on "%Total Solids estimate" to find the "actual" content. If the desired total solids level is 13 percent, and the milk is in a 100 gallon tank, and the Brix reading is 8 percent, the feeder will need to add about 29 lbs of a 20:20 (20 percent crude protein: 20 percent crude fat) milk replacer powder to the waste milk in the tank. How much replacer powder you add will depend on the nutrient content of the replacer you are using.

(See http://www.das.psu.edu/dairynutrition/calves for a spreadsheet to calculate how much powder to add.)



View of milk through the refractometer.

If you would like help setting up a monitoring program for feeding waste milk, please contact your veterinarian. *Contact Veterinary Medicine Extension if you are a Washington calf raiser or dairy producer and are interested in participating in a waste-milk monitoring research project.* For project information, email us at: VetExtension@vetmed.wsu.edu, or call Dale Moore at 509 335-7494.

*One caveat to using the refractometer with milk is that you need to clean the lens well to remove any fat residue from previous samples or the lines you see will appear very fuzzy. Our conversion table may work only for the refractometer we used (Reichert Brix 35HP).

By: Dr. Dale Moore, Director, Veterinary Medicine Extension, damoore@vetmed.wsu.edu

Reference -- Moore DA, Taylor J, Hartman ML, Sischo WM. Quality assessments of waste milk at a calf ranch. *Journal of Dairy Science*. 2009;92:3503-3509.

Swine Flu in Pigs

In May of this year, the H1N1 strain of flu infected pigs in Canada. The most likely exposure was from an infected worker returning from Mexico. According to Canadian officials, it is not uncommon for flu viruses to jump from humans to animals but it does not pose a risk for humans consuming pork. In early June, the pig farmer whose herd was infected with the new swine flu virus was forced to cull his entire herd because the pigs were under quarantine and he was facing problems with overcrowding. This incident raises a few questions: How do I protect my pigs? How would I recognize H1N1 flu in my pigs?

How do I protect my pigs? – Because there is no vaccine for this specific H1N1 flu virus for pigs as yet, having the humans around them vaccinated would be a producer's best bet, but the H1N1 human vaccine is currently unavailable except in clinical trial. Veterinarians, family members, farm workers and pig farmers should get vaccinated if the vaccine becomes widely available. Other ways to prevent exposure are to keep ill people from working with pigs and frequent hand-washing, the same things you would do to prevent spread to other people. Large pig operations likely have the kinds of biosecurity measures in place to prevent entry of any kind of virus that could affect the pigs. Guidelines for disease prevention from USDA include: Farmers should not loan equipment or vehicles to or borrow them from other farms. Swine from outside sources should not be brought back to the farm. They should permit only essential workers and vehicles to enter the farm. Swine workers should disinfect their shoes, clothes and hands. They should thoroughly clean and disinfect equipment and vehicles entering and leaving the farm and avoid visiting other livestock farms without proper cleaning and disinfection. Smaller operations where the pigs might come into contact with people would have the highest risk. If your pigs have seen a type of swine flu before, pre-existing immunity induced by swine influenza viruses circulating in the US may not protect pigs against the Pandemic H1N1/2009 virus presently circulating in people.

How would I recognize H1N1 flu in my pigs? – Swine get a variety of flu viruses just like people do and the diseases cause by them are likely indistinguishable. The influenza A viruses that infect pigs are most commonly H1N1, H1N2 and H3N2. Acute swine influenza is characterized by a short incubation period (1-3 days). The animals will go off feed, will be inactive and have the tendency to huddle and pile up on each other when they have a fever (ranging from 104.9 to 107.1F). If forced to move, the pigs will show respiratory distress with open-mouthed breathing and coughing. Runny eyes, nose and sneezing may be observed. Up to 100% of pigs in a group may become affected but mortality is low and usually does not exceed 1%. Animals usually recover 5 to 7 days after the onset of clinical signs. There is also the possibility for carrier animals of classical swine influenza. If you see signs of disease, contact your private or state veterinarian.

It is critical that pig producers pay attention to signs of disease in pigs as well as keep sick people from working with them. Reporting illnesses early will help veterinarians make the correct diagnosis and take the right precautions to help prevent the spread of this "new" influenza virus.

By: Dr. Dale A. Moore, Director, Veterinary Medicine Extension damoore@vetmed.wsu.edu

Beef Quality Assurance Program Highlights

Care and Handling

Cattle handlers have a responsibility to handle and care for animals in a humane manner. Some of the

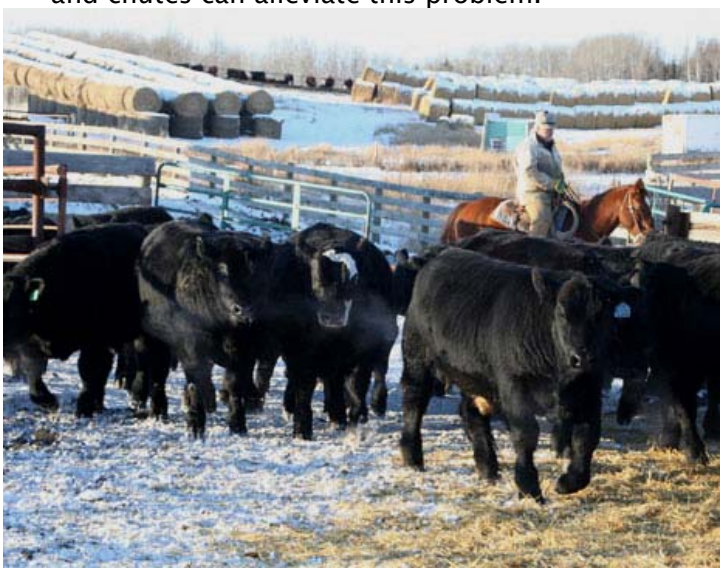
basic elements of humane cattle care are included in the following Producers Code:

- Provide necessary food, water and care to protect the health and well being of animals.
- Provide disease prevention practices to protect herd health, including vaccinations, parasite control and access to veterinary care.
- Provide facilities that allow safe, humane and efficient movement and/or restraint of cattle.
- Use appropriate methods to humanely euthanize terminally sick or injured livestock and dispose of them properly.
- Provide employees with training on how to handle and care for cattle in a low-stress manner.
- Keep up-to-date on advancements and changes in the industry so that decisions are made based on sound production practices and consideration for animal well- being.
- Make timely observations of cattle to ensure that their basic needs are being met.
- Persons who willfully mistreat animals are not tolerated.
- Minimize stress when transporting cattle.

The old animal handling attitude was often, "I'm going to MAKE that animal do what I want". That attitude needs to be replaced with a new one that says, "I'm going to LET that animal do what I want".

Success in implementing low-stress animal handling techniques requires an understanding of the principles of animal behavior that in turn should determine the appropriate human behavior. This will make animal handling much easier, reduce animal stress and improve handler safety. Poor animal handling techniques are often passed from one generation to the next. The following are some normal cattle behavior patterns handlers need to be aware of:

- Natural circling behavior: Cattle have a natural tendency to circle around a handler who is moving along the inner radius of the circle. This behavior pattern is one reason why curved single file chutes work well for loading cattle onto a truck or leading up to a squeeze chute.
- Cattle vision: Cattle have wide-angle vision of about 300 degrees, with a blind spot directly behind their heads, and poor depth perception. Loading and handling chutes should have solid sides to prevent cattle from seeing distractions outside the chute. Shadows, floor drains, slats on the floor, dangling chains, flapping coats hanging on the fence, etc. are all potential reasons for cattle to balk because of limited depth perception.
- Flight zone: The flight zone can be envisioned as an imaginary circle surrounding an animal that is the animal's personal space. If you invade this space, the animal will move away from you. If you back out of this zone, the animal will stop. The size of the flight zone is proportional to the wildness of the cattle; the wilder the cattle, the larger the flight zone.
- Noise: Cattle can hear both lower volume and higher frequency sounds better than humans. Loud or strange noises should be avoided in when handling livestock. For instance, the sound of clanging metal gates can cause cattle to balk when loading them in a chute. Rubber stops on gates and chutes can alleviate this problem.



A number of factors have negative effects on carcass quality. Specific management techniques can eliminate or avoid them.

- Horns increase the incidence of carcass bruising and can be reduced by dehorning calves prior to weaning or by using polled bulls.
- Excessive hot-iron brands decrease the value of the hide. If hot iron brands are used, locate them where hide damage will be minimal. Freeze branding is an alternative.
- Birdshot and buckshot is sometimes found embedded in the carcass. This is evidence of a practice that is unacceptable, not only from a

carcass quality standpoint, but especially from a humane animal treatment perspective.

- Injection site lesions can be eliminated by administering injections subcutaneously in the neck area or in the loose skin behind the elbow of the front legs.
- Poor body condition is evidence of an unhealthy animal or poor management practices. It is important to provide veterinary care and access to water and adequate amounts of feed.
- Carcass bruises are often evidence of rough handling and/or unsafe handling facilities.
- Animals showing signs of cancer eye should be culled as soon as this condition is noticed.
- Sick animals should be diagnosed and treated immediately.

Facility design and transportation of cattle must be included in a well-designed cattle-handling strategy in an effort to minimize stress and carcass bruising. Success in implementing low-stress animal handling requires an understanding of of animal behavior that should determine the appropriate human behavior. There are a number of factors that have negative effects on carcass quality and there are corresponding management techniques that can be implemented to eliminate or avoid them. All cattle handlers have the responsibility to practice humane animal treatment.

By: Donald D. Nelson, Extension Beef Specialist, WSU
nelsond@wsu.edu

Feeds and Additives

The feeds and feed additives we use have a life-long impact on the health and well being of both fed and non-fed cattle. They impact how they grow to maturity, and once cattle reach maturity they impact their health, ability to reproduce, gain weight, and residual market value.

Each group of animals has specific nutritional needs. A feedlot steer needs a different diet from a late-pregnant cow. When selecting feeds, we need to insure they meet the cattle's nutritional needs, have no chemical residues, and are not contaminated with fluids or other organisms. The feed should be inspected for unusual color, odor, or mold, high temperature damage, and foreign matter. Once the feeds are in our control we need to prevent against contamination or damage to the feedstuffs. Store equipment, fluids, solvents, and other chemicals away from feed storage or feed production areas. Producers should have quality control measures in place to insure they are buying and maintaining safe and reliable feedstuffs.

Feeding ruminant proteins to ruminants has been banned since 1997. This Ruminant Feed Ban regulation is designed to prevent BSE and insure the safety and marketability of beef products. Some of the exceptions are inspected, cooked meat products, pure porcine or equine protein, blood and blood by-products, milk and milk protein, and gelatin. When feeding fat insure it does not contain residues, and obtain quality, stability, efficacy and consistency information from the fat supplier.

Feed additives are used to prevent or treat diseases and parasites. Feed additives should be used carefully and with strict adherence to product labels. No one can legally prescribe, or change, the use of any feed additive other than as directed on the product label. Byproduct feeding should support sound science, avoid violative residues, follow FDA label instructions, and avoid the use of extra-label byproducts.

Care for the cattle includes care in their feeding to keep them healthy and produce a quality product.

By: Ed Field, WA BQA Coordinator, WA Cattle Feeders
For more information on Beef Quality Assurance see: http://www.bqa.wsu.edu/states/wa/index.htm

Continuing Education

Veterinarians

Academy of Dairy Veterinary Consultants

Fall Meeting October 23-24, 2009, Reno NV Holiday Inn – Sparks/Reno. "Financial State of the Dairy Industry". For more information, call Katy Tellessen at 509 335 8221 or go to: http://www.vetmed.wsu.edu/orgADVC/upcoming.asp

Dairy Cattle Reproduction Council

Regional Meeting – November 19-20, 2009 in Boise, ID. Held at the Doubletree – Riverside. DCRC website for more information: http://www.dcrcouncil.org/index.html

Veterinarian Online CE for Official Trich Testing

To take the course and receive certification, go to: http://vetextension.wsu.edu/programs/bovine/trich/index.htm

Veterinarian Online CE for TB Testing Certification

To take the course and receive certification, go to: http://vetextension.wsu.edu/programs/bovine/tb/index.htm

Producers

Washington State University - Lamb 300

October 1-3, 2009. For more information contact Sarah Smith at the WSU Grant-Adams Extension at (509) 754-2011 ext. 413

WA State Dairy Industry Annual Meeting

October 27-29, 2009. Red Lion Inn, Pasco, WA. For more information call 360-482-3485.

Washington Cattlemen's Association

November 11-14, 2009, Red Lion Inn, Pasco, WA. For more information call 509-925-9871.

Heat Detection in Dairy Cattle

An online course for producers but is available to students and veterinarians. To take this free course, visit: http://vetextension.wsu.edu/courses/index.htm

Dairy Employee Education Materials Online

A link to the producer version of ***DairyBeef: Maximizing Quality & Profits*** is available as well as down-loadable employee education programs in English and Spanish on market cow quality. To view or download these files visit: http://www.bqa.wsu.edu/DairyBeef/index.htm

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